CLAIMS

1.   A transmit filter for generating a oversampled signal from a stream
2 of data symbols generated responsive to a symbol clock, comprising:

circuitry for receiving the data symbol stream;

4   phase tracking circuitry, responsive to the a reference clock generated
independently from the symbol clock, for maintaining phase information relative
6 to the symbol clock; and

sample generating circuitry for generating samples responsive to said
8 phase information.

2.   The transmit filter of claim 1 wherein said sample generating
2 circuitry generates samples at an active edge of said reference clock.

3.   The transmit filter of claim 2 wherein said sample generating
2 circuitry generates samples on each clock cycle of said reference clock.

4.   The transmit filter of claim 2 wherein said sample generating
2 circuitry generates samples on selected clock cycles of said reference clock.

5.   The transmit filter of claim 1 wherein said reference clock
2 comprises the output of a frequency divider.

6.   The transmit filter of claim 1 wherein said reference clock is
2 selectable from two or more clock signals.

7.   The transmit filter of claim 1 wherein said phase tracking circuitry
2 comprises circuitry for adding a predetermined value to a stored value on each
clock cycle of said reference clock.

8.   The transmit filter of claim 7 wherein said predetermined value is a
2 ratio between a frequency associated with said symbol clock and a frequency
associated with said reference clock.

9.　　The transmit filter of claim 1 and further comprising circuitry for

2　storing a current data symbol and a predetermined number of preceding data

symbols.

10.　　The transmit filter of claim 9 wherein said sample generating

2　circuitry comprises circuitry for generating a sample point responsive to said

phase information, said current data symbol and one or more of said preceding

4　data symbols.

11.　　The transmit filter of claim 10 wherein symbol data for generating a

2　sample point is defined by a plurality of transfer function curves.

12.　　The transmit filter of claim 11 wherein symbol data for one of said

2　curves is stored in a memory and symbol data for other of said curves is derived

from said symbol data for said one curve.

13.　　The transmit filter of claim 11 wherein the symbol data for said one

2　curve comprises a power of two number of data points.

14.　　The transmit filter of claim 11 wherein said memory stores symbol

2　data for multiple sets of transfer curves.

15.　　The transmit filter of claim 11 wherein symbol data for multiple

2　sets of transfer curves are stored in respective memories.

16.　　The transmit filter of claim 1 and further comprising circuitry for

2　identifying an approximate center of a data symbol.

17.　　The transmit filter of claim 16 and further comprising circuitry for

2　tracking an approximate center for each data symbol in said stream independent

of the symbol clock.

18.　　A method of generating a oversampled signal from a stream of data

2　symbols generated responsive to a symbol clock, comprising the steps of:

　　　　receiving the data symbol stream;

　　　　responsive to a reference clock generated independently from the symbol

4

clock, for maintaining phase information relative to the symbol clock; and

　　　　generating samples responsive to said phase information and said

6

reference clock.

19.　　The method of claim 18 wherein said sample generating step

2　comprises the step of generating samples at an active edge of said reference

clock.

20.　　The method of claim 19 wherein said sample generating step

2　comprises the step of generating samples on each clock cycle of said reference

clock.

21.　　The method of claim 19 wherein said sample generating step

2　comprises the step of generating samples on selected clock cycles of said

reference clock.

22.　　The method of claim 18 and further comprising the step of

2　generating the reference clock through a frequency divider.

23.　　The method of claim 18 and further comprising the step of selecting

2　the reference clock from two or more clock signals.

24.　　The method of claim 18 wherein said step of maintaining phase

2　information comprises the step of adding a predetermined value to a stored

value on each clock cycle of said reference clock.

25.   The method of claim 24 wherein said predetermined value is a ratio

2   between a frequency associated with said symbol clock and a frequency

associated with said reference clock.

26.   The method of claim 18 and further comprising the step of storing a

2   current data symbol and a predetermined number of preceding data symbols.

27.   The method of claim 26 wherein said sample generating step

2   comprises the step of generating a sample point responsive to said phase

information, said current data symbol and one or more of said preceding data

4   symbols.

28.   The method of claim 27 wherein symbol data for generating a

2   sample point is defined by a plurality of transfer function curves.

29.   The method of claim 28 and further comprising the steps of storing

2   symbol data for one of said curves is stored in a memory and deriving symbol

data for other of said curves from said symbol data for said one curve.

30.   The method of claim 28 wherein the symbol data for said one curve

2   comprises a power of two number of data points.

31.   The method of claim 28 wherein said storing step comprises the

2   step of storing symbol data for multiple sets of transfer curves in one or more

memories.

32.   The method of claim 18 and further comprising the step of

2   identifying an approximate center of a data symbol.

33.   The method of claim 32 and further comprising the step of tracking

2   an approximate center for each data symbol in said stream independent of the

symbol clock.

34.   A transmit filter for generating a oversampled signal from a stream

2   of data symbols generated responsive to a symbol clock, comprising:

circuitry for receiving the data symbol stream;

4   phase tracking circuitry, responsive to a reference clock, for maintaining

phase information relative to the symbol clock; and

6   sample generating circuitry for selectively generating samples responsive

to said phase information and said symbol clock.

35.   The transmit filter of claim 34 wherein said sample generating

2   circuitry generates samples on randomly selected cycles of said reference clock.

36.   The transmit filter of claim 34 wherein said sample generating

2   circuitry generates samples on deterministically selected cycles of said reference

clock.